

### NO ALFALFA IS CREATED EQUAL, SO ANALYZING FORAGE QUALITY IS PARAMOUNT

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Due to a litany of factors, not limited to varietal selections and environmental conditions, alfalfa forage quality always differs. Alfalfa grades will vary even within the same stand, so it's essential to constantly test forage quality so you have a good grasp on what you're feeding your animals.



# AMERICA'S ALFALFA™

Whether producing alfalfa for your own operation or as a cash crop, analyzing forage quality provides a valuable indicator of animal performance. Forages are the base for most animal rations and dietary requirements differ significantly between dairy cows, beef cattle, and horses. Therefore, the forage quality that best fits one production category isn't necessarily ideal for another. That's why getting an accurate read on forage quality is critical.

For example, dairy cattle need a high caloric intake to fuel milk production. To maximize intake and production, they should be fed alfalfa that contains high levels of net energy (NE) of lactation, crude protein (20% or more), calcium, and easily digestible, high-quality fiber.

Often referred to as "dairy-quality alfalfa," this grade of alfalfa isn't a proper fit for mature performance horses, because excessive protein can lead to higher body temperatures and an increase in water consumption. Instead, a mature horse's diet should consist of only 8-10% protein, so alfalfa with a lower protein content and more digestible energy (DE) is a better fit. Meanwhile, the dietary requirements for beef cattle fall in between those of dairy cattle and horses.



#### COLLECTING FORAGE SAMPLES

# 10%

What are the best steps to take when testing forage quality? It all starts with taking representative samples of harvested alfalfa. I recommend sampling at least 10% of your harvested crop. If you have 100 bales of hay, use a hay probe to capture samples from 10 bales that were harvested in different areas of a field rather than from 10 sequentially harvested bales.

Taking representative samples from silage bunkers can be more of a challenge. The best way to counter that is to test more frequently and continue sampling during feedout so you have the opportunity to make adjustments in your rations. When pulling samples from wrapped silage, be sure to cover the holes from where you sample to prevent spoilage.

Before sending samples to a laboratory, enclose them in sealable, airtight bags to ensure quality is maintained during shipping. For the most accurate analysis, I encourage utilizing the services of a laboratory that's certified by the National Forage Testing Association (NFTA).

#### REVIEWING FORAGE ANALYSIS

Forage quality directly impacts feed cost and animal production, so the results that come back from the lab will help guide how much alfalfa to include in your rations and identify which forage grades to feed different animals. Here are some of the most important measurements nutritionists will consider when looking to meet ration requirements:

- **Crude protein (CP)** contributes to the dietary metabolized protein supply, which is the amount of protein that's absorbed by the animal. A high CP level is especially important when feeding dairy herds, while beef cattle and horses have lower requirements. In addition to CP, an increased focus is being placed on predicting the amount of essential amino acids alfalfa provides, and how it helps meet animal protein requirements.
- **Neutral detergent fiber (NDF)** is a measurement of the cell wall content of the forage and the rumen-filling capacity of the alfalfa. A benefit of feeding alfalfa is that it has a low NDF content, which means it fills the rumen less than other popular forages, increasing intake potential. Increased intake results in faster gains and more efficient production.
- **Acid detergent fiber (ADF)** is a measure of the least digestible forage fiber components. Animals typically get lower energy from alfalfa with high ADF levels, so lower ADF means more desirable feed quality and better digestibility. Both ADF and NDF are good indicators of alfalfa maturity at harvest, as both levels increase when alfalfa harvest is delayed.
- **Neutral detergent fiber digestibility (NDFD)** illustrates what's available to the animal by measuring how much NDF is digested in vitro in a lab over different periods of time including 30, 48, 96, and 240 hours. Most nutritionists continue to use NDFD 30 to help them determine how much alfalfa to use in the ration for different production groups. However, some use a combination of the different intervals to help model a digestibility curve, and ultimately a rate of digestion.

- **Total digestible nutrients (TDN)** are the sum of the digestible fiber, protein, lipid, and non-fiber carbohydrate components of a feedstuff or diet. TDN is directly related to digestible energy and is particularly useful for beef cow rations that are primarily forage. However, it's important to confirm which equation your lab uses to calculate it. The newest and most accurate equation is the Summative Equation, which is recommended by the National Research Council. The other is the Western States Equation, which is based off alfalfa's ADF content.
- **Relative feed value (RFV)** is intended to reflect how well an animal will eat and digest if the forage is fed as the only source of energy. This index compares the quality of a hay sample to that of full-bloom alfalfa hay, but only ADF and NDF content are used to calculate it. Since protein content and fiber digestibility are not reflected in RFV, most farmers place a higher focus on the newer RFQ index.
- **Relative forage quality (RFQ)** is an estimate of how much available energy an animal will obtain daily from a particular forage if it is all that's fed. Unlike the older RFV index, RFQ calculates TDN and intake using *in vitro* fiber digestibility estimates, making it a more reliable estimator of value to an animal. RFQ is viewed as the leading marketing tool in comparing and pricing most forages, making it an important figure to consider when buying or selling alfalfa.
- **Net energy (NE)** is the amount of gross energy in feed minus the energy lost in feces and urine, and through heat and gas production. An important measurement in dairy production, NE is recognized as the closest estimate of the energy values of ingredients and diets because it takes the heat increment from the digestive process and metabolism of feeds into account.
- **Digestible energy (DE)** is the amount of gross energy in feed minus the amount of energy lost in feces. Nutritionists use this figure more when developing rations for horses.

### NEW TEST CAN HELP PREDICT PERCENT LEAVES IN ALFALFA

Whether alfalfa farmers are trying to meet the dietary requirements of their own animals or maximize their profit potential when selling hay, most will agree growing a high-quality alfalfa stand is an important goal. That makes leaf retention a high priority.

Leaf loss is one of the major factors impacting harvested alfalfa forage quality and yield. According to research performed by Forage Genetics International (FGI) in 2021, alfalfa leaves have an RFQ of 440 on average, but the average RFQ of stems is only around 80. So, a few leaves lost here and there can add up quickly.



Leaf percentage accounts for up to 77% of the variation in forage quality, so it can be a big factor when farmers sell their alfalfa based on RFQ (FGI Research 2020). A 2%-unit difference in leaves can affect a stand's RFQ by almost 10 units.

FGI recently developed the [Leaves Enhance Alfalfa Forage \(LEAF\)](#) test to measure the percentage of leaves in a given sample. This new predictive equation can help you quantify alfalfa quality and monitor management practices to help get the most out of your alfalfa stand.